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# Emergency Beach-Fill Procedures: Lessons Learned From 2004 Hurricane Season

*by Dan Haubner, Rick McMillen, Monica Chasten, Linda Lillycrop,  
and Greg Williams*

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**PURPOSE:** This Coastal and Hydraulics Engineering Technical Note (CHETN) is intended to guide the reviewer through the processes that were utilized to restore 21 shore protection projects within the 2005 Fiscal Year, placing 12 million cu yd of sand on the Federal beaches within the U.S. Army Engineer Division, South Atlantic. The guidance that was provided and the emphasis that Congress and Headquarters, U.S. Army Corps of Engineers (HQUSACE) placed on these actions were extremely important to the success of the Flood Control and Coastal Emergencies (FCCE) program. This technical note outlines the Project Information Report (PIR) preparation phase, actions taken to expedite the PIRs through the approval process and the concurrent contracting strategies that allowed the work to be executed efficiently.

In addition to documentation of the lessons learned by the South Atlantic Division in the 2004 hurricane season, this technical note provides an overall summary of emergency response procedures that can be undertaken by other Districts following storm events affecting shore protection projects. The appropriate references and excerpts from the authorities that may be required to efficiently act following a storm event are provided in HQUSACE (2001a, b, c). A post-storm case example from the U.S. Army Engineer District, Wilmington (repair of the Hatteras Breach) is provided in Wamsley and Hathaway (2004) and Wamsley et al. (2010).

**BACKGROUND:** The hurricane season of 2004 brought significant damage to the southeast United States through wind, wave, and flooding effects. Executing the Federal Emergency Management Agency's (FEMA) recovery missions resulted in enormous workloads and many logistical challenges as hurricane after hurricane continued to pound the Southeast. The U.S. Army Corps of Engineers (USACE) was tasked with several key missions to assist the victims of the hurricanes in their recovery efforts and to assist in preparing for the next hurricane season. An important mission included the congressional response to erosional damages that occurred at Federal shore protection projects due to prolonged storm effects. These actions were conducted utilizing guidance from Public Law (PL) 84-99 (Emergency Flood Control Funds Act of 1955) (HQUSACE 2001c) under FCCE authorities as directed through Engineer Regulation (ER) 500-1-1 (HQUSACE 2001b), Engineer Pamphlet (EP) 500-1-1 (HQUSACE 2001a), and Policy Guidance Letter (PGL) No. 27 (HQUSACE 1992). Under these directives, the condition of each project was analyzed and documented in a PIR prepared by the U.S. Army Engineer District, Jacksonville. Appropriate post-storm actions to repair and restore these projects were initiated based on the finding in each of the PIR reports.

**DESCRIPTION OF 2004 HURRICANE SEASON AFFECTING FLORIDA:** In 2004, four hurricanes made landfall in the southeastern United States. Hurricane Charley, a Category 4 storm, struck the southwest Florida coast on 13 August 2004. Hurricane Frances, a Category 2

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storm, hit the central east coast of Florida on 5 September 2004. Shortly after Frances, Hurricane Ivan came ashore on 16 September 2004 near Gulf Shores, AL, as a Category 3 storm. By the time Hurricane Jeanne, a Category 3 storm, made landfall on the central east coast of Florida on 25 September 2004, it marked the first time since 1886 that a state had been affected by four hurricanes in one tropical storm season. All four hurricanes caused wind, wave flooding, and erosion damage, affecting Federal shore protection projects in the South Atlantic Division region (Figure 1).

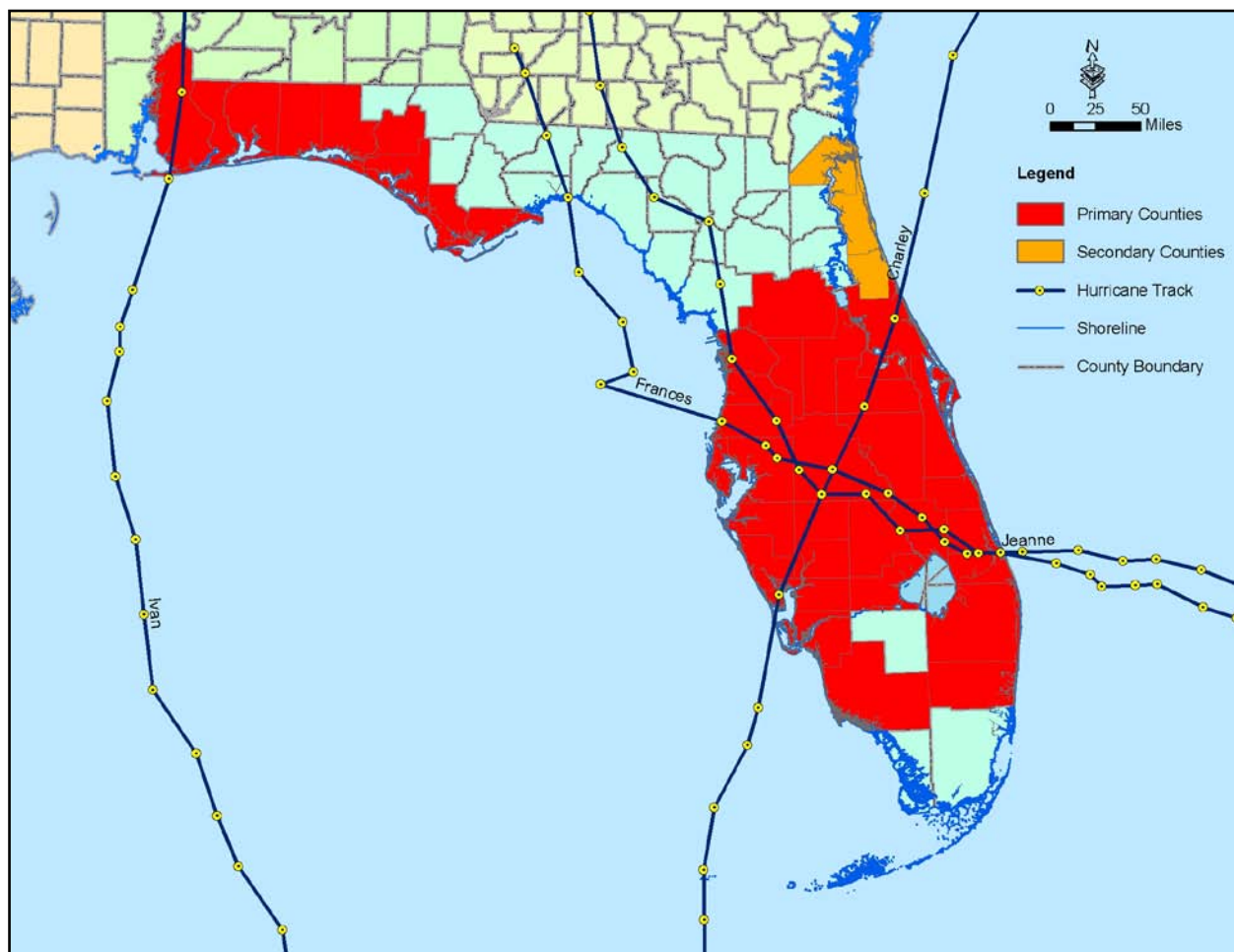


Figure 1. Affected areas of Florida from four hurricanes during 2004 season.

**POST-STORM EXPERIENCE:** Emergency procedures relative to the restoration of shore protection projects implemented because of the 2004 storms started with the enactment of Public Law 108-324 (Emergency Hurricane Supplemental Appropriations Act of 2005) on 13 October 2004. By 19 October 2004, a Regional Team was established and began the process of evaluating the eligibility and condition of shore protection projects within the area affected by the storms. The post-storm recovery process included identifying federally-authorized and constructed projects and their eligibility, preparation and approval of PIRs, obtaining environmental approvals, preparation of plans and specifications, obtaining signatures for cost-sharing agreements, acquiring real estate easements, obtaining non-Federal funds and awarding restoration

contracts. The significant steps involved in this post-storm process that led to projects being physically repaired and renourished are summarized in Table 1 and detailed in subsequent sections throughout this technical note.

<b>Table 1. Timeline for successful recovery.</b>	
<b>Post-storm Action</b>	<b>Date Conducted</b>
Storms Impact Region	13 August; 5, 16, & 25 September 2004
Congress Provides Funding (Act Passed)	13 October 2004
Regional Team Assembled (HQ, SAD, 5 Districts)	19 October 2004
Headquarters Guidance Provided	25 October 2004
First Project Delivery Team (PDT) meeting in Jacksonville	26 October 2004
Funds Received for Project Information Reports	1 November 2004
Regional Independent Technical Review Team Established	1 November 2004
In-Progress Review Team Established	5 November 2004
Contract Acquisition Plan Approved	12 November 2004
District Engineer Public Notices Issued	26 October 2004 (Jacksonville District) 10 November 2004 (Charleston District) 18 November 2004 (Mobile District))
LIDAR survey data collection of Entire Florida Coast	November-December 2004
Scope of Recovery Needs	1 December 2004
First Contract to Place Nourishment Awarded	26 January 2005
First Nourishment Project Completed	24 April 2005
Last Project Completed	4 August 2006

**FUNDING, GUIDANCE AND INITIAL COORDINATION:** The provisions provided to the Corps in responding to hurricanes are contained in PL 84-99, which was passed in 1955, and is codified in the U.S. Code at 33 U.S.C. 701n. “Flood ce.shore protective structures; emergency supplies of water; drought; well construction and water transportation.” Once a storm has passed, a District’s Emergency Management Office typically initiates the process of enacting PL 84-99 by issuance of a Notice to Public Sponsors. If the local sponsor believes that its project may qualify for rehabilitation assistance, a written request must be submitted to the Corps within a specified time period.

The Corps has developed guidance, which serves as the basis for applying this law, which includes ER 500-1-1 (HQUSACE 2001b), and EP 500-1-1 (HQUSACE 2001a), as described in the following paragraphs.

ER 500-1-1 (HQUSACE 2001b) is the regulation which prescribes the policies for the Civil Emergency Management (CEM) Program of the Corps under the authorities of PL 84-99 (HQUSACE 2001c); as well as the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5121 et seq.) (The Stafford Act); Army Regulation (AR) 500-60, Disaster Relief (HQ Department of the Army 1981); and ER 1130-2-530, Flood Control Operations and Maintenance Policies (HQUSACE 1996).

Engineer Pamphlet 500-1-1 (HQUSACE 2001a) is a companion document to ER 500-1-1, and is the pamphlet which prescribes processes and procedures for the management and execution of

the Civil Emergency Management Program of the Corps. This EP provides greater specificity than the ER, and is intended to be used in conjunction with ER 500-1-1.

Collectively, the law, the ER, and the EP provide the requirements necessary, and the procedures for evaluating the eligibility of authorized hurricane and storm damage reduction projects to receive funding for repair of these projects. This guidance identifies that the document used to evaluate eligibility for participation are PIRs, and further identifies the key criteria for consideration within the PIR. The key criteria are discussed in detail within this CHETN.

As previously discussed, following the tropical storm season of 2004, PL 108-324 (Emergency Hurricane Supplemental Appropriations Act of 2005) was passed, which provided funding to repair Federal shore protection projects damaged by the storms, and also provided specific guidance for determining the eligibility for participation, which modified the guidance contained in the ER and EP. This specific guidance was reinforced in the Planning Guidance Letter provided from HQUSACE. The specific guidance contained in PL 108-324 is discussed in the following paragraphs, along with the effect that it had on the repair process.

**Public Law 108-324. Emergency Hurricane Supplemental Appropriations Act of 2005 (13 October 2004).** Congress responded to these storm impacts with an emergency supplemental appropriation for the Corps of Engineers, PL 108-324. In addition to the guidance previously mentioned, a Policy Guidance Letter was disseminated by HQUSACE, Homeland Security Office of the Civil Works Directorate on 25 October 2004 to provide additional guidance with respect to the Emergency Hurricane Supplemental Appropriations Act of 2005 (PL 108-324). The Corps of Engineer's initial role in the emergency supplemental appropriation was minimal and limited to cursory estimation of funding needs.

**Flood Control and Coastal Emergencies (FCCE).** PL 108-324 provided \$148 million in FCCE funding for the repair of Federal shore protection projects damaged by the storms. Although ER 500-1-1 directs the repair of hurricane/shore protection projects to either pre-storm conditions or to a limit which reduces the threat of loss of property or life (whichever is less), this FCCE funding came with a statement from the Joint Committee (and reiterated in the PGL of 25 October 2004) that all involved will evaluate restoring the beaches to pre-storm conditions without considering the evaluation between the two conditions directed in ER 500-1-1. This guidance provided direction for the determination of loss of material and made a significant difference during the evaluation phase by removing the subjective interpretation of the policy that has hindered the PL 84-99 authority in past attempts. The guidance provided a clear definition as to what quantity of material would be covered by FCCE funds. For the 2004 storm season, the FCCE appropriations provided for 8 million cu yd of material to bring the beaches back to pre-storm conditions at a 100 percent Federal estimated cost of \$74.8 million.

**Construction General (CG).** The conference agreement provided an additional \$62,600,000 for Construction General to provide for the repair of storm damage to authorized shore protection projects, and for time-sensitive data collection and analysis of the performance of shore protection projects, including the development of a three-dimensional physics-based analytical model. If a sponsor desired to restore their project to full design dimensions, i.e., they were in need of renourishment prior to the hurricanes, then this funding allowed the USACE District to cost-share in that effort in accordance with existing Project Cooperation Agreements (PCA).

Restoration to full project dimensions involved the placement of an additional 10.3 million cu yd of material at a total estimated cost of \$106 million. The Federal cost-share portion of this total was \$62 million.

**General Investigations (GI).** An additional \$400,000 was provided to update the study underway for the Walton County, FL, beaches. This funding was used to update existing conditions, evaluate storm impacts and incorporate those impacts into the storm damage analysis.

All of these accounts were funded at the levels that they were because the District project managers coordinated closely with the sponsors on damage assessments and then communicated this information up the chain. The ability to quickly analyze post-storm data, either actual surveys or field investigations, resulted in a quick assessment of impacts and the ability to provide accurate information into the emergency budgeting process.

**Joint Statement/Conference Committee/HQ Guidance.** As already mentioned, the Joint Explanatory Statement of the Committee of Conference accompanying the Military Construction Appropriations and Emergency Hurricane Supplemental Appropriations Act, 2005, (PL 108-324) stated that the intent of Congress is to repair/rehabilitate those eligible flood control and coastal storm damage reduction projects to their pre-storm condition as well as provide analysis of the performance of shore protection projects impacted by the storms.

**Guidance and Engineer Regulation 500-1-1.** The PGL of 25 October 2004 clearly stated that the work to be completed under this Emergency Appropriations Act is to bring the projects back to pre-storm conditions. It specifically addressed ER 500-1-1's guidance of "Emergency repair and rehabilitation of Hurricane and Shore Protection Projects (HSPP) with FCCE funds will be limited to that necessary to allow for adequate functioning of the project, or restoration to pre-storm condition, whichever is less" by directing the pre-storm condition (that is, not requiring evaluation between the two conditions). This PGL allowed for a quick determination of impacts and reduced the amount of time and effort required to justify recommendations within the PIRs prepared under PL 84-99. This PGL also assisted in the "Risk Test," a policy which bases the need for FCCE funding on an assessment of the risk to life and property and the need for immediate action. In short, after discussions among the Districts, Division, and Headquarters, it was decided that the subjective interpretation would not come into play. Provided a positive benefit to cost ratio was determined, FCCE funds would be used to restore the project back to its pre-storm condition and CG Supplemental funds would be used to restore the project to its full-authorized and design levels. Full restoration to design levels was also conditional upon the sponsor's participation. Following the 2004 storm season, there were two projects where the sponsor desired FCCE restoration only.

The following two policies for rehabilitation are taken from ER 500-1-1 and were critical in the justification for expending FCCE funds.

**Eligibility Criteria for Consideration.** To be eligible for rehabilitation assistance consideration, an HSPP must comply with the following:

- a. Must be a completed element of a federally authorized hurricane or shore protective structure project.

- b. Repair/restoration to a pre-storm condition is necessary to allow for adequate functioning of the project.
- c. The proposed work must have a benefit to cost ration greater than 1.0 (without recreation benefits).

**Two Key Criteria for Assistance relative to “The Extraordinary Storm”.** To be eligible for FCCE funding, the HSPP project must have been substantially eroded/damaged by wind, wave, or water action “*of an other than ordinary nature.*” ER 500-1-1 and EP 500-1-1 define an extraordinary storm event as a storm that due to its prolongation or severity, creates weather conditions that cause significant amounts of damage to a HSPP. The two criteria critical to the extraordinary storm definition are:

- a. Prolongation or severity means: a Category 3 or higher hurricane or a storm that has an exceedance frequency equal to or greater than the design storm of the authorized project.
- b. A significant amount of damage has occurred when any one of these three occur:
  - Estimated cost of the repair exceeds \$1 million and is greater than 2 percent of the original construction cost.
  - Estimated cost of repair exceeds \$6 million (excluding mobilization/demobilization costs).
  - More than one-third of the planned or historically placed sand for renourishment effort has been lost due to the storm.

These criteria were the main focus of the first rounds of effort in preparation of the PIRs for each project. An In-Progress-Review (IPR) was held for each project once this data had been analyzed and presented. The prolongation/severity measurement was dealt with by the compounded number of storms and their durations. Even if a project was hit with a Category 2 storm it was deemed as meeting the first criteria by demonstrating that three other hurricanes had been through the same area and storm-generated winds and waves had long durations, therefore exercising more extreme effects on the projects over this 6-week period of time. This policy was instrumental in overcoming the “Extraordinary Storm” event criteria. In previous years, the interpretation of the extraordinary storm event was always related to a category level or if an “Emergency Declaration” was issued by the President. The interpretation was that simple and clear cut. Although storms in the past caused shoreline damage to Federal projects within the Jacksonville District, no PL 84-99 report was ever approved in the past because of the strict interpretation of the “Extraordinary Storm” criteria. For example, in 1995, storm impacts from Hurricane Opal (Category 3 at landfall in Pensacola, FL) were experienced all along the gulf coast of Florida from Naples to Clearwater Beach and throughout the panhandle. PL 84-99 reports were prepared for all of Jacksonville District’s shore protection projects, and sufficient damage and justification for emergency repairs were disapproved only because they did not meet the “Extraordinary Storm” criteria. In 1999, Hurricane Irene, a Category 1 storm when it reached Florida, caused damage along the Martin County and Ft. Pierce Beach shore protection projects. PL 84-99 reports were prepared for these projects following the storm and emergency restoration was found to be justified, but again was disapproved based only upon the “Extraordinary Storm” criteria. Following the storms of 2004, application of the new interpretation of the “Extraordinary Storm” actually took into account the physical forces that were attacking the Federal shore

protection projects and proved to be a better and more accurate interpretation of the “Extraordinary Storm” criteria.

To determine the amount of damage that occurred, volume computations were done utilizing pre- and post-storm bathymetric and topographic surveys. Fortunately, the Joint Airborne Lidar Bathymetry Technical Center of Expertise (JALBTCX), had collected high resolution charts (Wozencraft 2003), elevation, and imagery data along the Florida coast just 3 months prior to the hurricanes as part of the USACE National Coastal Mapping Program (Wozencraft and Lillycrop 2003). JALBTCX also collected post-storm data along specified areas of interest. Along with sponsor-provided monitoring data, these data sets provided the information needed to compute damages or erosion volumes incurred by the storms. Rough order of magnitude costs were then generated to make the determination of the “significant damage” criteria. The costs were then refined as the rest of the PIR continued toward completion. Teleconferences were held with Division and HQ to conduct the IPR and ensure that eligibility for FCCE funding was being properly demonstrated for each project.

**Education of Sponsors and Eligibility.** As previously mentioned, the project managers coordinated closely with the sponsors to gather quick damage assessments. A valuable lesson learned from this effort is that the sponsors need to be educated and briefed early in the process on the eligibility criteria for FCCE funds. This alleviates unmet expectations and discontented sponsors and clearly defines roles and responsibilities. Effective Public Notices are considered one tool in dealing with this issue, but teleconferences with the sponsors are more effective, clearly transmit the criteria, and answer questions up front. Differentiating between FCCE work and CG work is critical when talking to the sponsor so there is no misunderstanding on what is 100 percent Federal funded and what is cost-shared. It should also be noted that FCCE funds cannot be handled by the sponsor; in the case of reimbursable projects the Corps has to perform any FCCE work.

**Sponsor Constructed Federal Projects.** Completed portions of a federally authorized HSPP that were constructed by non-Federal interests are eligible for Rehabilitation Assistance when approval of such construction was obtained from the Commander, HQUSACE or a designated representative prior to the storm event. An HSPP project or functional element thereof is considered complete when it has been formally transferred to the non-Federal public sponsor for Operation, Maintenance, Repair, Replacement, and Rehabilitation (OMRR&R). A critical long-term item that becomes important relative to the reimbursable projects is the PCA. Most projects that are reimbursed have a one-time PCA that allows the Corps to reimburse the sponsor for their work. If FCCE funds are to be utilized they must be expended by the Federal government. This means that a sponsor cannot be reimbursed for FCCE material. FCCE construction is handled by a simple cooperative agreement that is signed and executed at the District level. However, if the sponsor wishes to save money on mobilization and demobilization of a dredge plant and the project is in need of renourishment back to full design, then a PCA must be drafted, reviewed, approved and executed. This additional effort can have an impact on the construction schedule and any environmental windows that are in effect. Items such as this need to be discussed early on with the sponsors and their intentions clearly defined.

**EXPEDITED PROCESS:** Due to the magnitude of storm impacts, the availability of funds provided by PL 108-324, and the critical need to restore the eroded beaches prior to the 2005



hurricane season, an expedited PIR execution process was established. Development and implementation of the expedited PIR process proved to be invaluable for the successful execution of the emergency response program and restoration of the Federal shore protection projects.

**Effective Communication.** The expedited PIR process involved simultaneous generation and review of each project report. The review process included an independent technical review for each PIR in addition to in-progress reviews by HQ. With this vertical line of communication established and implemented in advance, issues and resolutions to issues were dealt with in an efficient and time-sensitive manner. A File Transfer Protocol (FTP) site was established to provide quicker and easier access for all regional team members to review documents. This site was particularly helpful during the Independent Technical Review (ITR) of the PIRs. One of the lessons learned related to actual “access rights” to the FTP site. In this age of security, some regional elements had problems accessing the site or simply could not find the appropriate documents. It was later determined that computer “rights” to the site was the problem, as some regional elements did not have the appropriate computer privileges. The solution was to simply have an Information Management (IM) individual on call whenever this situation occurred so that “rights” could be provided as soon as possible.

**Team Development.** Due to the large impact area and the outreaching effects of the wave fields over the 6-week period of storm activity, the number of affected projects was beyond a normal scope for a District. The effort became a South Atlantic Division effort with the regional team coming together quickly during a one-day meeting held on 22 October 2004. This initial draft of the team was refined and expanded over the next 2 weeks and replacements were found as the effort carried over into February 2005. Within the Jacksonville District alone, there were 15 projects that had to be evaluated in accordance with ER 500-1-1. These 15 projects were divided into three groups of five projects based on environmental dredging windows and likelihood of meeting the eligibility requirements. At that time, three teams were set up to cover the 15 projects. Each team consisted of a Planning Technical Lead (PTL), a coastal engineer, economist, archeologist, cost estimator, real estate specialist, geotechnical engineer, biologist, and an Office of Counsel representative. The team focused on assembling the items required to determine FCCE eligibility for each project and drafting the initial outline of the PIR report. All team members worked concurrently; for example, the biologist would gather the National Environmental Policy Act (NEPA) documents and work with the Water Quality Certification (WQC) application if required, the real estate specialist would verify necessary easements and staging areas, the coastal and geotechnical engineers would verify quantities and viability of borrow areas, etc. Action items that would normally be done in sequence were initiated concurrently on the assumption that the project would move forward and a plan would soon follow.

The ITR Team was also a regional team with members from four of the five Districts within the South Atlantic Division. The ITR team reviewed work that was posted to an FTP site every evening, providing feedback and comments throughout the development of the PIR. Each of the major disciplines were represented and contributed to the expedited process not only by assisting with technical issues, but by providing quality and system control improvements that facilitated a smoother Division/HQ review.

**Early Resolution of Legal and Authority Issues.** The checklist that is contained within the PIRs was extracted directly from EP 500-1-1, which provides an excellent source of policy

and legal issues that need to be addressed early in the process (HQUSACE 2001a). NEPA issues, either with the borrow area, beach project, or the WQC are some of the items that should be initiated early in the process if the PIRs are to be completed in a timely manner. Coordination of a PCA with the project sponsor, if required, is the longest lead item and must be identified early. Office of Counsel is a key member of the team and coordination with HQ is critical. The HQ FCCE Manager has a vital role in initiating early communication with all of these parties.

- **Federal Participation through Life of Project:** One of the major policy questions that arose through HQ reviews involved the project life and the wording of the different project authorities; these issues would stop the review of a PIR for days. It is important to ensure that time frames and evaluation periods are consistent throughout the PIR. Each authorization must be clearly spelled out and well researched within the PIR so that the appropriate information is communicated clearly up the chain of command. Authorizations vary radically from the early 1960s to present day and each can be worded in such a way that demonstrates Federal participation for a period of 50 years, or until actually deauthorized.
- **Harbor Mitigation Projects:** Another frequent topic of discussion during HQ review involved Section 111 principles and how an authorized project was intended to be implemented. Authorizing documents need to be clearly quoted and the rationale for implementation explained so that any cost sharing issues on CG funds can be clearly defined outside of the PCA. In the Jacksonville District, two projects fell within this category; the St. Johns County Shore Protection Project and the Sarasota County Shore Protection Project – Venice Beach Segment.
- **Public Use and Access:** This topic ties in closely with the previous two sections in that depending upon the reviewer, the existing easements that were obtained for the Federal project may come into question. Different view points on Federal participation and Federal Interest and current policy guidance on perpetual easements were debated during this hectic time of emergency efforts. Although the 50-year public access easements met one requirement and could be clearly defined in the decision document that the authorization was based upon, some believed that perpetual easements were still required. Section 111 projects that are incorporated into HSPP projects also raised this question on length of easements. These topics have the potential to halt construction and need to be addressed in advance of an emergency situation. Each District should coordinate with their Offices of Counsel, Real Estate, Division and HQ representatives and be prepared for these real estate issues ahead of time. If real estate information is not documented in advance of a storm, each project team should immediately initiate a review of shoreline ownership, access and use and then clearly document the results within the PIR.

**Determination of Economics.** The calculation of the Benefit to Cost Ratio (BCR) underwent several iterations throughout the PIR process, sometimes with as many as seven different versions of the economics generated. Many projects did not have updated economics or structural inventories, but updating an inventory was not feasible in this post-storm emergency scenario. Lessons learned from this experience suggest that the ER and EP and the PIRs from the 2004 South Atlantic Division season should be reviewed relative to these economic topics. A baseline economic process should then be established defining the required economics for FCCE

evaluation and the process required for any additional CG work that may be part of the recommended plans.

**Bulk Funding of Project Information Reports.** Bulk funding was requested from HQ with the budget estimate including survey, technical, PIR preparation, contracting, administration, NEPA, project management, etc., costs for all projects (even those that were only potential costs). This money was delivered to one District that then established the necessary milestones and transferred to the other entities as required. This funding process saved time and effort in the distribution of funds and allowed the teams to work without checking their labor codes.

A total of \$1,200,000 was initially estimated for the bulk funding amount. Of this amount, \$300,000 was allocated for JALBTCX LIDAR surveys, leaving a balance of \$900,000 for planning, engineering, design, ITR, etc. for all of the projects. With roughly 30 potential projects to investigate, \$30,000 per project was initially estimated. In order to respond to the emergency mission sufficiently and in a timely manner, both the preparation of the PIRs as well as the plans and specifications for each individual project were performed concurrently. When efforts were completed, only 17 projects were determined to be eligible and actual costs for the PIR preparation and development of plans and specifications with associated permitting and contracting came to a total of \$1,550,548 (including the \$300,000 for LIDAR surveys).

**Standardized PIR Format.** The PIR format was standardized by EP 500-1 (HQUSACE 2001a) and then any modifications to the format were presented during the first integrated team meeting so that all team members were aware of the report format. This standardization helped to save time in preparation of the PIRs and reduced the amount of ITR questions.

**Concurrent Review.** The PDT updated their sections of the PIR nightly and then had the directory structure placed on an FTP site where the ITR, Division, and HQ team members could retrieve them for review. This accessibility and concurrent evaluation greatly expedited review and approval processes. Conference calls were utilized at key junctions such as IPRs and Technical Review completion to ensure that all issues were dealt with and identified. The PIR Checklist from EP 500-1-1 was extremely beneficial to this process. The intent of the IPR is to keep the Program Management Team and Headquarters updated on the progress of project development and address and resolve any technical or policy issues during the process.

**Surveys and Data Requirements.** An extremely critical piece of the PIR execution process, which is frequently overlooked, is the collecting and analyzing of pre- and post-storm topographic and hydrographic survey data for the areas of concern.

**Existing Data (pre-storm).** The southeastern United States had recently been mapped detailing the hurricane impact zones in the May/June 2004 time frame, thus providing an excellent source of pre-storm data for the damage analysis. The JALBTCX conducted this mapping as part of USACE National Coastal Mapping Program. The LIDAR data, in conjunction with sponsor provided monitoring data, was critical in establishing the condition of the beaches prior to hurricane landfall. Again, the key point is constant coordination with the sponsor. If the project did not have a recent survey, the sponsor should be aware of any other data collection efforts that may be used to help establish pre-storm conditions. Pre-storm data gathered at the beginning of the hurricane season proved to be extremely valuable and is recommended on an annual basis.

**Collected Data (post-storm).** The collection of post-storm data was required following the storm events to document beach conditions. Some of the project sponsors were able to mobilize survey crews to collect data for their records and the USACE's use in this effort. However, due to the large extent of damage coverage and the availability of survey crews, JALBTCX was called upon again. Coordinating with Division, Headquarters, and JALBTCX, the District was able to obtain post-storm data in an extremely timely manner for the areas of interest. Although preparations were initiated by both the Corps and non-Federal sponsors, no surveys were actually taken in between the storm events. The storms occurred so close together, that post-storm surveys were finally taken only after all four events had passed.

**ENVIRONMENTAL COORDINATION:** A number of environmental laws apply to the placement of sand or the repair/replacement of structures damaged by storm events. In addition to those repair/replacement activities under PL 84-99, the opportunity to cost effectively conduct periodic renourishment or make improvements to damaged structures, at the same time, may present itself. While PL 84-99 work generally falls under the category of "emergency" work for the purposes of compliance with environmental laws, the additional work would normally fall outside the realm of "emergency." Most environmental laws have special procedures for "emergencies." Most notably, these laws include the NEPA, Endangered Species Act, and the Clean Water Act (see Table 2, Environmental Requirements). Of utmost importance is for the District to clearly understand the current status of all of the NEPA documentation and to reinstate coordination on sensitive projects and projects where there is a substantial amount of dredging and placement activity in a short time period.

Close coordination with environmental resource agencies is needed to expedite emergency work. For such emergency work, it is often necessary to conduct the repairs prior to the next storm season (or even prior to the next storm event within the same storm season, as the case may be). Normal procedures may take a year or more to complete. This time frame may not be acceptable in light of the goal to protect property and life.

**Conference Calls.** It is important to identify the stakeholder agencies and specific points of contact (POCs) as early as possible. Once these agencies have been identified and there is enough information on the scope and nature of the effort, it is highly beneficial to schedule an initial face-to-face meeting with the agencies. At this meeting, the scope and nature of the effort would be presented. Each party should be asked to identify any issues they may have relative to accomplishing the proposed effort within the desired time frame. Names, telephone numbers, and e-mail addresses of POCs should be collected to help maintain close communication throughout the process.

Weekly conference calls with the stakeholder agencies proved to be important to maintain the level of communication needed to expedite compliance with environmental requirements. A checklist matrix of requirements and status of completion maintained by the responsible environmental staff is recommended. This checklist matrix is updated and e-mailed to the resource and stakeholder agencies prior to the weekly conference call. During the conference call each item is reviewed individually and the responsible party is asked to provide an update on the status of their efforts. Any information needs or other issues are discussed along with a suitable resolution. Table 3 provides a Checklist Matrix used for these efforts. The checklist matrix and other information needed for environmental compliance (to the extent possible and appropriate)

should be posted on the FTP site designated for the emergency effort. Access to this FTP site should be given to the stakeholder agencies and serve as the primary means of expeditiously transferring technical information. Follow-up correspondence by more traditional means of communication should be conducted as needed.

<b>Table 2. Environmental requirements for emergency work (PL 84-99).</b>				
<b>Law*</b>	<b>Requirement</b>	<b>Potential Resolution</b>	<b>Stakeholder Agency**</b>	<b>Reference</b>
National Environmental Policy Act (NEPA)	Prepare Environmental Assessment (EA) or Environmental Impact Statement (EIS) or Categorically Excluded	Within the scope of an existing NEPA document, prepare new EA, use NEPA associated with regulatory permit action or nationwide permit, use emergency NEPA procedures	U.S. Environmental Protection Agency (EPA) [Council on Environmental Quality (CEQ) if the emergency action would normally be subject to an EIS]	40 CFR 1500 (CEQ Regulations) ER 200-2-2 (Corps Regulations)
Endangered Species Act (ESA)	Biological opinion (BO) for impacts to listed species or designated critical habitat	Within the scope of an existing BO, obtain new or revised BO, existing regional biological opinion	U.S. Fish and Wildlife Service and/or National Marine Fisheries Service (NMFS)	Consultations with Federal Agencies Endangered Species Act Consultation Handbook
Magnuson-Stevens Fishery Conservation and Management Act (Essential Fish Habitat)	Send essential fish habitat assessment to National Marine Fisheries Service who may prepare conservation recommendations and elevate to Chief of Engineers if Corps decides not to follow them	Expediently prepare essential fish habitat assessment and send to NMFS, obtain NMFS "conservation recommendations," negotiate with NMFS to avoid elevation to Chief of Engineers	National Marine Fisheries Service	Southeast Region Benthic Habitats (Puerto Rico and Virgin Islands) South Atlantic Fisheries Management)
Clean Water Act (Section 401)	Obtain Water Quality Certification (WQC)	Modify existing WQC, use WQC associated with Regulatory permit or nationwide/regional permit, include Federal projects in "Emergency Order" (Florida DEP did not do this in 2004)	Appropriate State or Commonwealth Agency (or EPA if no such designated authority for the proposed action)	Florida Department of Environmental Protection Applications and Existing Permits Florida DEP Statutes Florida DEP Rules
Clean Water Act (Section 404)	Public Notice, Opportunity to Request a Public Hearing, 404(b) evaluation	Use or modify existing Department of the Army Permit or Nationwide Permit or Civil Works Project 404 compliance, new compliance	EPA	Wetland Regulations
Coastal Zone Management Act (CZM)	Prepare consistency statement and seek concurrence from State	Work closely with State or Commonwealth Agency to expedite	Appropriate State or Commonwealth Agency	
National Historic Preservation Act	Assess impact to historic resources and coordinate with the State Historic Preservation Officer (SHPO)	Work closely with SHPO to expedite	State Historic Preservation Officer	Advisory Council Historic Preservation Guide Sec 106 National Historic Preservation Act

<b>Table 3. Checklist matrix (for weekly telephone conference, posting on FTP site, and monitoring progress).</b>								
<b>Project Name</b>	<b>Environmental Window or Issues</b>	<b>Permit/WQC Status</b>	<b>Sponsor Construct (Yes/No)</b>	<b>NEPA/ 404(b)/ CZM</b>	<b>EFH</b>	<b>ESA</b>	<b>CAR</b>	<b>Mitigation Status &amp; Other</b>
	Identify any project specific environmental windows or other environmental issues/ limitations	Indicate status of Water Quality Certification	Indicate Yes if the sponsor will construct	Indicate issues and status associated with NEPA, Section 404 of Clean Water Act, and Coastal Zone Consistency	Indicate issues and status associated with essential fish habit (EFH assessment, conservation recommendations, and elevation)	Indicate status of biological opinion, reasonable and prudent measures	Identify CAR: activities proposed may be addressed in an existing Fish and Wildlife Coordination Act Report (CAR)	Indicate status of any existing, proposed, or required mitigation. Indicate status of Cultural Resources Compliance and Coordination. Any other environmental compliance issues
Project 1								
Project 2								
Project 3								
Project 4								

**CONTRACTING MECHANISMS:** Some of the truly innovative and meaningful measures that were taken to ensure success came from the Contracting Division. Contracting personnel understood the challenge the District was confronted with and coordinated up, down, and across the chain to ensure that these contracts could be legally awarded as quickly as possible. Approval process for the PIRs, implementing P2 and transferring funds, and environmental windows were all overcome, but without the contract mechanism in place, these projects would not have been constructed.

**First Solicitation.** “Generic fronts” were advertised on Jacksonville District’s Electronic Bid Solicitation (EBS) Web site for each project that was anticipated to be awarded. This totaled 17 projects (14 in Jacksonville District, 1 in Mobile District, and 2 in Charleston District). No Procurement Packages nor Plans and Specifications (P&S) were available at this early stage. These generic sets of fronts were prepared to “fit” any size project due to not having rough order of magnitude costs. The “fill-in clauses” (such as Liquidated Damages and Site Visits) were left incomplete. The statement was included in each set of fronts that P&S would be added by Amendment. This was done to “start the clock” (i.e., 30-day advertisement period).

**Addendums to Advertisements.** As P&S became available for each project, amendments were issued incorporating the P&S and updating the “fronts.” Bid Opening dates were established as 10 days after the amendment was issued. Additional amendments were issued as required and further delayed the bid opening, if necessary.

**Contract Award.** Each emergency contract was treated as if it were an Invitation for Bids (IFB). As mentioned earlier, each project was advertised by itself with its own solicitation number. The advertisement period was initiated just as described in the “First solicitation” paragraph. Individual project P&S were provided under the respective solicitations by amendments as they became available. Included in the specifications was the requirement for the contractor to provide his required contract submittals within 5 days following Bid Opening and that the contractor was to commence dredging within 15 days from the date of the Issuance of the Notice to Proceed

(NTP). Once the Bid Opening occurred, each project was awarded to the apparent low bidder within 7 days and most times much sooner. The NTP was issued in less than 14 days. And for the most part, contractors were actually mobilizing to the site within 15 days with actual dredging commencing on or about that 15th day. The key to this contract strategy was starting the solicitation “Clock” early and then pushing the contract award and issuance of the NTP as fast as possible. Requiring the contractor to provide his submittals within 5 days after award allowed the Corps to issue the NTP quickly.

**Broward County Project:** This particular project was a reimbursable, sponsor-constructed beach-fill project, which was already preparing to conduct a renourishment construction contract. The permitting process did not allow two dredges in the environmentally sensitive area at the same time, and regulations would not allow the transfer of FCCE funds to the sponsor for credit on their construction. Since the Federal government has to contract and construct the FCCE portion of a project, this presented a contracting issue due to the sponsor preparing to award their renourishment contract and begin construction. The project that was advertised in November 2004 had to be modified because it needed to be procured under a different acquisition strategy. This was due to the fact that the project now consisted of a separate contract being awarded by the Broward County Board of County Commissioners and another area of the beach being contracted under the Federal Project (PL 84-99).

Broward County had already opened bids and was preparing to award to a contractor. Due to environmental concerns, as well as logistical issues, there would have been difficulty in awarding a Federal contract to a different dredging firm; therefore, a Justification and Authorization (J&A) was prepared and a sole-source award was made to the same contractor that Broward County had selected for its portion of the beach.

**Summary of Contracts Awarded.** In total, 16 out of 17 projects were awarded in 2005 (13 in Jacksonville District, 1 in Mobile District, and 2 in Charleston District). The only project that was not awarded was the Broward County Segment II Shore Protection Project. The environmental resource agencies set the requirement that before sand can be placed on this stretch of shoreline, the Broward County Segment III must be monitored for a minimum period of 18 months. The concern here was for the sensitive coral hardbottoms directly offshore of the project. Broward County Segment II is located immediately north of the Port of Everglades harbor/inlet. Broward County Segment III is located immediately south of the inlet.

**LESSONS LEARNED:** The primary objective of this technical note is to provide a summary of experience and to document post-storm actions following the 2004 tropical storm season in the South Atlantic Division. An added objective of this report is to develop lessons learned that can assist with future post-storm recovery processes in both the South Atlantic Division and Corps-wide. The large number of projects located within the Jacksonville District combined with the numerous storms that occurred in 2004, required long and flexible working hours from members of all teams, efficient decision-making and clear guidance in order to successfully repair projects following such a damaging storm season. The Jacksonville District was able to identify actions that were successful in the recovery process and some actions that could be improved upon in future emergency situations. Table 4 provides a summary of some of these actions.

<b>Table 4. Lessons learned by Jacksonville District during post-storm recovery process.</b>	
<b>Successful/Beneficial Actions</b>	<b>Challenges Faced during Recovery Process</b>
Bulk funding for Project Information Report Preparation; funding process to disburse funds	Over-time/Holiday Season
HQ Program Management Team	All PIRs in preparation simultaneously
PDT, ITR and IPR Teams/Regional and Vertical Teams	Environmental Clearances and Coordination
Early Policy Guidance and Direction; Key Decisions Made; Checklist from EP 500-1-1	Educating Sponsors on Eligibility for an Emergency Rehabilitation
Standardized PIR formats	Shore Bird/Turtle Nesting Season Windows
Establishment of FTP site for file transfer and concurrent review	Winter Construction
In Progress Review meetings for each project and weekly conference calls	Dredging Contractor/Equipment Availability
Collection of LIDAR data coast wide	Ongoing FEMA Missions
Overcame impediments that are now documented and should lead to more efficient post-storm process	Urgency to repair projects before 2005 hurricane season (Dennis occurred in June 2005)

Throughout this CHETN, key points have been identified that should benefit other USACE Districts/Divisions faced with the potential emergency repair of Federal beach nourishment projects. Most of these points involve the benefit of planning and preparation actions that can be done at Districts and Divisions in advance of the need for emergency work. Some of the issues that can be addressed ahead of time include economic, environmental, contracting, real estate, project authorities, and project life identification, documentation of Points of Contact and Project Delivery Team members for each project and documentation of pre-storm project conditions through physical monitoring. Recommendations include:

- Be proactive in advance of emergency situation; have a good strategy in place.
- Create teams (USACE and sponsors; establish Points of Contact for projects).
- Establish procedures with all teams (HQ, Divisions, and Districts) to expedite PIR preparation, eligibility review and post-storm approval processes.
- Define and resolve issues; investigate different justifications.
- Conduct conference calls with environmental Points of Contact.
- Identify contracting procedures that may be utilized following both large and small-scale storm events.
- Understand real estate easement issues in advance of emergency situation.

A review of project documents to clearly define project life and authorities should be completed. Periodic meetings to review project status, discuss emergency procedures, and review the PIR content and preparation process would also be beneficial on a regular basis and at least prior to each storm season. At a minimum of annually, data should be collected documenting the condition of the beach and then summarized in an annual inspection report that can be readily utilized as a storm approaches. With these proactive strategies in place, the USACE would be able to more efficiently execute the FCCE mission resulting in a successful post-storm recovery and assistance program.



Some of the post-storm experience presented in this CHETN and subsequent discussions through the Shore Protection Assessment Program indicate that further discussions are required regarding policy and guidance relative to project eligibility criteria. More specifically, FCCE activities for shore protection projects are not as straightforward as compared to those for flood control efforts. The two most difficult areas of interpretation relate to the definition of the “extraordinary storm” and the level of project restoration following a storm event. The policy and guidance relative to shore protection projects should seek to clarify and/or modify the definitions of the “extraordinary storm” and an “adequately functioning project” to better represent the extent of repair that should be allowed through FCCE funding.

**POINTS OF CONTACT:** This CHETN is a product of the Shore Protection Assessment (SPA) Program. Questions about this technical note can be addressed to William R. Curtis, SPA Program Manager, at 601-634-3040, e-mail: [William.R.Curtis@usace.army.mil](mailto:William.R.Curtis@usace.army.mil).

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